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ABSTRACT

Two hypotheses were tested: (1) A group which has the greatest number of gains in performance on successive trial scores will develop a more positive attitude toward the task; and (2) A group which has the greatest gains in performance in successive trials will show the greatest change in an already formed attitude. Male and female high school students (N=24) in Cape Girardeau, Missouri, were randomly selected and divided into two groups with an equal number of males and females in each group. The subjects performed 12 trials of 15 seconds each of a rotary pursuit task, read directions for completion of the attitude measure instrument, and then completed the instrument. This series of activities was then completed a second time. The difference in treatment of the two groups occurred in the time-on-target. The motor learning performance scores were significantly different between the first and second set of trials and between the sexes. The two factorial analyses of attitude scores did not support the hypotheses. There was a significant interaction with girls' attitudes, improving significantly when more precise information produced an increased number of gains. (Author/JD)

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EFFECTS OF GAINS IN PERFORMANCE ON ATTITUDES FORMED TOWARD A MOTOR LEARNING TASK

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Two hypotheses were tested: (1) A group which has the greatest number of gains in performance on successive trial scores will develop a more positive attitude toward the task; (2) A group which has the greatest gains in performance in successive trials will show the greatest change in an already formed attitude. Male (N=12) and female (N=12) high school students from the University High School in Cape Girardeau, Missouri, were randomly selected and randomly divided into two groups with an equal number of males and females in each group. The subjects performed 12 trials of 15 seconds each of a rotary pursuit task; read directions for completion of the attitude measuring instrument and then completed the instrument. This series of activities was completed a second time. The difference in the treatment of the two groups occurred in the KR (time-on-target). The A group received its KR during the first 12 trials to the full second. During the second 12 trials, the A group received its KR to .01th of a second. The B group was the reverse of this procedure. The B group received its KK to .01th of a second during the first 12 trials and in the second 12 trials the KR was given to a full second. The difference in treatment caused the subjects in the .01th of a second group to achieve more gains in performance than those whose KR was to a full second. The motor learning performance scores were significantly different between the first and second set of trials and between the sexes. The two factorial analyses of attitude scores did not support the hypotheses. There was a significant interaction with girls' attitudes, improving significantly when more precise information produced an increased number of gains.

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Effects of Gains in Performance on Attitude Formed Toward a Motor Learning Task

Attitude has been the subject of research in physical education literature since Alden (1934) published an article entitled "Factors in the Required Physical Education Program That Are Least Attractive to College Girls." The trend of trying to find factors which could be manipulated to influence attitude continues (Figley, 1985). The rationale given is that students with positive attitudes are more likely to engage in the activity. Certainly, the development of a positive attitude toward physical education and activity has been one of the objectives of instruction.

The early researchers frequently constructed questionnaires to find the answers to their questions (Anderson, 1934; Smith, 1933; Moore, 1941). However, there was a shift in approach after Wear(1955) published his scale for measuring attitude toward physical education. The questions became "Who likes physical education?" and "What is there about those who like physical education that is different from those who do not?" (Berger & Layne, 1969; Brumbach & Cross, 1965; Campbell, 1968; Vincent, 1967).

Carr (1945) found three factors which were related to success in activities: motor ability, attitude and intelligence. She felt that intelligence and motor ability are dependent on heredity but that attitude is learned. She suggested that an attempt should be made to determine whether and how attitude might be changed. Further, she maintained that a necessary forerunner to changing attitude was the study of its development. Martens (1975) has recently repeated this cry for the study of the development of attitude.

Social psychologist have ceased to search for factors in their attitude research and are now mainly concerned with testing theories. Psychologists do agree that attitudes are learned. A concomitant attitude such as an attitude formed toward a physical activity or motor task is learned according to Staats (1967) in a classical conditioning learning paradigm. When a stimulus such as a name of a motor task is paired with a performance of the motor task which elicits an emotional response, the emotional response becomes attached to both stimuli. Staats defines attitudes as an "emotional response" to a stimulus. Harter (1978) sees a similar relationship between efforts at mastery of a physical task and feelings toward the task.

If an attitude toward a task develops by being associated with an emotional response produced by performing the motor task and with an evaluation of the results of each task, and if in performing a motor task it can be assumed a subjects wants to improve, then a gain in peformance when two successive trial scores are compared should produce positive feelings. If Staats' theory is correct, when the name of the task is paired with the performance of the task and an emotional response has been produced, the emotional response should become attached to both the task and na;e of the task.

A subject can make comparsions between successive trial scores in a motor task when the knowledge of results (KR) is available after each trial. It is possible then for a subject to determine if there has been a gain, a loss or no change in performance. If in learning a motor task, it can be assumed a subject wants to improve, than a gain in performance between successive trial scores should be positively reinforcing. Therefore, it is hypothesized:

1.A group which has the greatest number of gains between successive trial scores will develop the most positive attitude toward the motor task.

Attitudes which have already started to form should be modified by gains in performance. Subjects who have a greater number of gains should have more positive feelings to attach to the motor task. Therefore, it is hypothesized :

2. A group which has the greatest number of gains betweeen successive trial scores will show the greatest change in an already formed attitude.

McConnell (1976) found support for the hypotheses. There was a direct relationship between the number of gains in performance and the attitude formed toward the task. That study has limited ability to be generalized because the subjects were college physical education majors. The purpose of this study was to determine whether perceived gains in performance would affect the attitude of a high-school-age group.

METHODS

Subject

The subjects, 12 males and 12 females, were randomly selected from the senior high school of the University School of Southeast Missouri State University in Cape Girardeau, Missouri. All gave consent to participate in the experiment and were naive in the use of the pursuit rotor tracking equipment.

Instrumentation

A Lafayette Photoelectric Pursuit Rotor (Model no. 2230E) was used for the learning task. The subjects were required to track with a stylus a target moving at 60 RPM in a clockwise direction during trials of 15 seconds

duration. Time-on-target was recorded to .01 of a second with a Hunter 120A Digital Timer. Rest intervals of 15 seconds were provided between successive trials. The timing of the trials and the timing of the rest intervals were performed manually by the researcher in response to a tape recorded interval marker.

The subject's attitude toward the motor task was measured using an instrument based on the evaluative dimension of semantic space. The instrument was developed using the technique described by Osgood, Suci and Tannenbaum (1957). The instrument developed by this technique is one suitable for the measurement of any attitude. Osgood reports a reliability of .85 in same day repeated measure of the same attitude. Validity of the attitude measure was established by rank ordering three activities. When the rank orders of the three activities were correlated with the rank order of the scores on the semantic differential for the three acitivities, the correlation was 1.00.

Procedure

The experiment consisted of two repetitions of each subject's tracking the target on the Lafayette Pursuit Rotor apparatus with the stylus for twelve trials, each of 15 seconds' duration; each subject's reading the directions for the completion of the attitude instrument and then each subject's completing the instrument. The difference between the treatment of the two research groups occurred in the KR given after every trial. After each of the first 12 trials, the A group was given its KR to .01 of a second, while the B group was given its KR to the full second. The difference in the precision of the KR was designed to affect the number of times a subject would achieve gains in performance. The more precise KR

(.01) would show a greater number of gains in performance. During the second twelve trials, the A group KR was changed to a full second while the B group received its KR to .01th of a second.

The data from both the motor performance and the attitude instrument were analyzed with a two factorial repeated measure ANOVA analyses. The acceptable level of significance was .05.

Results

The motor performance scores were not of primary interest in this study. However, the result of the analysis indicated there were significant differences between blocks of trials [F(1,20)=9.5p.01] an indication of improved performance with practice. There was a sex difference [F(1,2;)=4.82p.05]. From inspection it appears the boys performed better than the girls.

The ANOVA of the attitude scores indicated there were no differences between groups. There was no support for the hypothesis that the group receiving the greater number of gains in performance would have a most positive attitude toward the task. There was no interaction effect to support the hypothesis ;hat a group that received more gains would change in a positive direction. There was, however, an interactisn between trial x sex x group [F(1,20)=9.47p.006)] which was significant. The girls that received the least gains in the first block of trials made the greatest change in their attitude when given more precise feedback.

Table 1 indicates that there were differences in the number of gains students received. However, they may be too similar to achieve the effect expected. McConnell's (1976) study had much more failure. McMillan & Forsyth

(1983) contend there is more emotion connected to failure than to success.

Table 1

Table 2 shows the attitude toward the task of the groups. The girls who received the KR to a full second first had a positive attitude toward the task (31.8 with a range of 7 to 49). When their feedback became more precise, their attitudinal shift was the greatest. However, they never were so positive as all other groups.

Table 2 in here

The hypotheses were not supported. Gains affected by KR precision had little effect on attitude.

DISSCUSSION

McConnell (1976) found that gains in performance were related to the attitude formed toward the task when the subjects were college physical education majors. This study indicates that high-school-age subjects attitude' is not affected by gains in performance to any significant degree.

One of the possible reasons for this lack of support for the hypotheses may have been the ease of the task. While the task was easy, Bailey et. al. (1975) found that task ease resulted in as much positive motion as a difficult task. Weiner and Kulka (1970) did not show this to be true in their study so the ease of the task may have affected the results. The number of gains were not so dramatically different between the two conditions as they were in McConnell's (1976) earlier study. Therefore, if the task were more difficult, there would be a more

dramatic difference in gain scores. Further, McMillan & Forsyth (1983) contend there is more emotion connected with failure than with success.

Another possible reason for the lack of results in this study may have to do with self-concept. Weiner's attribution model theorizes that success in performance is regarded by subjects with positive feelings. Ames (1978) found support for the theory with subjects who had a positive self-concept but subjects with a low self-concept ignored any positive emotional reaction to success. With the more general school population utilized in this study it is possible to explain the lack of effects of gains in performance on atttitude by the nature of the subjects. Physical education majors would have a positive self-concept in regard to motor task performance while it is possible that a less selective group would not. The study should be repeated with some control for self-concept built into the study.

The results of this study indicate there was a sharp increase in attitude by the girls as their KR precision improved, which is probably due to what Lenney (1977) called girls' lack of self-confidence in achievement situations. Corbin (1984) showed that this lack of self-confidence extends to motor tasks. Without clear feedback, girls seem to have more negative feelings toward their responses than do boys because they tend to underestimate the quality of their responses. Without the KR to give the girls clear information about their performance, they appear to feel they are not successful, while the boys tend to feel successful even without clear information. This study reinforces the necessity of giving girls precise and clear information concerning their performance in physical education activities. It would

appear that the sooner precise information is given the better.

The study needs to be repeated with a more difficult motor task and with some measure of self-concept to see whether the gains in performance do affect students. Further, it would be of interest to see if younger children are affected the same way as older ones. For the younger children, it would be important to be sure they understand the information given to them and can use it to interpret success and failure.

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Table 1

Mean Number of Gain Scores by Group: High School

Group	First Trials	Second Trials	Total
A	5.4	6.5	11.9
B	6.5	4.8	11.3

Table 2

Mean Score for Attitude Toward the Task by Group and Sex Within the Group

Group	Sex	First Measurement	Second Measurement
A	Male	40.6	41.8
	Female	31.8	37.1
B	Male	37.5	37.3
	Female	40.1	39.6

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